

# So What's Happening with The World Bank/GEF Solar Thermal Power Projects?

Trough Workshop General Meeting  
*Madison WI, June 18, 2000*



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# What You Can Expect...

- The GEF, the Bank and Solar Thermal
- A little bit on Egypt, India, Mexico and Morocco
- What are the main issues that we're thinking about today?



# GEF Financing Modalities

- To eligible developing countries (FCCC ratifier; WB/UNDP recipient)
- Provides incremental cost financing (i.e., portion not justified in the domestic context) to obtain global benefits
- In response to government requests or may grant direct to private sector with government approval

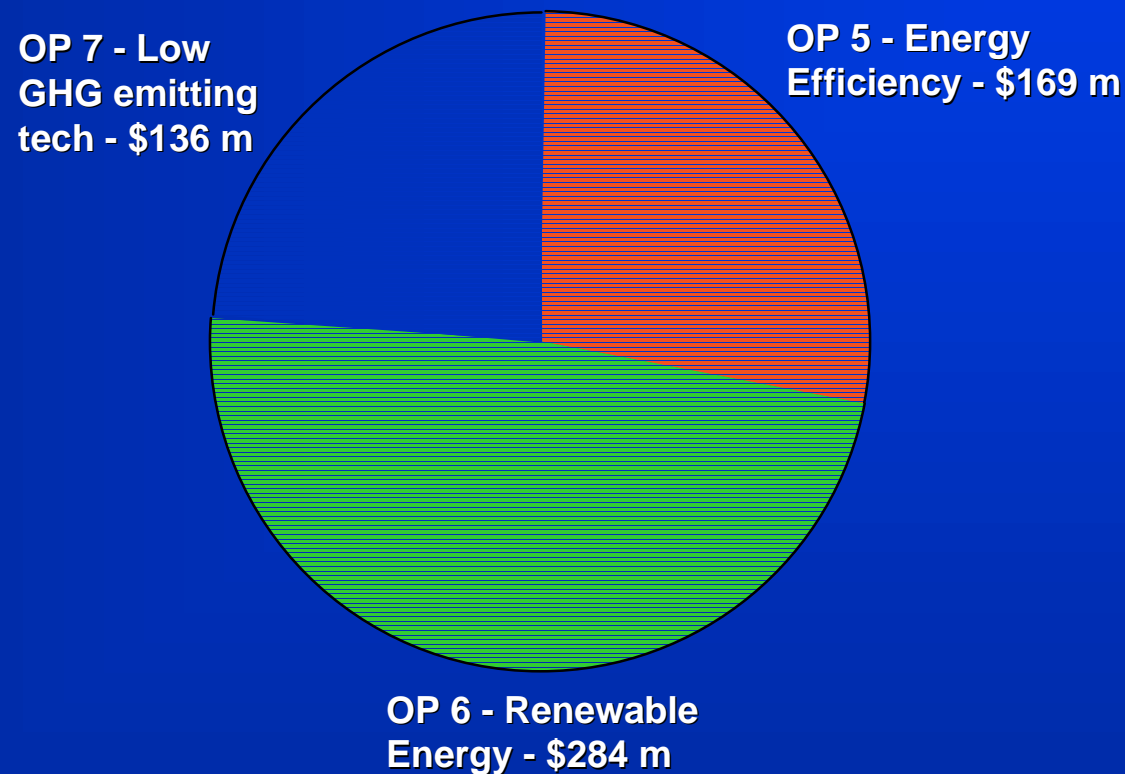


# Long Term Mitigation: a Key Element of GEF Climate Change Strategy

- Removing Barriers to Energy Conservation and Energy Efficiency (OP5)
  - Institutional development
  - Cost recovery
- Promoting Adoption of Renewable Energy (OP6)
  - Removing barriers
  - Reducing implementation (transaction) costs
- Reducing Long-term Costs of Low GHG Emitting Technologies (OP7)
  - Moving down the tech. learning curve



# Investing GEF Climate Change Funds



**Total: \$589 million approved by GEF Council (to 05/99)**



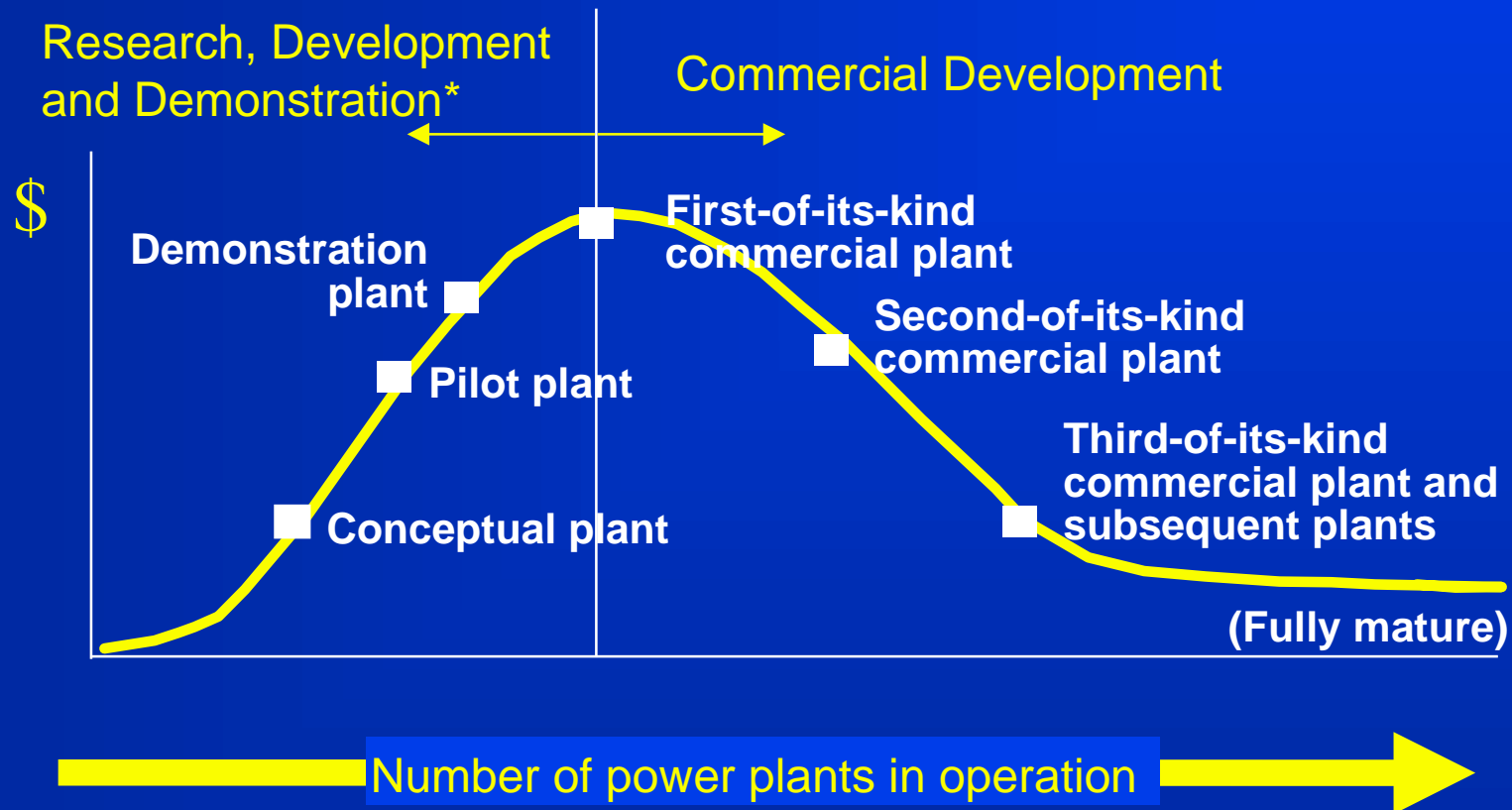
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# Operational program #7

- Promote the increased use of 'backstop' technologies with low emissions of greenhouse gas
- PV, biomass, solar thermal, wind, fuel cells and advanced fossil fuel generation technologies
- Targeted research, capacity building and investment



# The Learning Curve



\* In RD & D period cost estimate increases due to additional improvement and modification, adjustment required from original design

Source: EPRI



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# Programs supported by OP#7

- Advanced biomass technologies
- Solar thermal power
- Grid-connected PV (proposed)





# Program basis

- Existing experience in developed world
- Large technical potential in developing world
- But how do we get from here to there?
  - Where are the markets?
  - What are the technical issues?
  - What about the economics?



# Program principles

- Private participation
  - Allocate risk to those best able to manage it
  - Allow market to pick winning technologies
- Portfolio approach
  - Reduce risk of non-performance of individual projects
  - Gain better knowledge of costs and performance
  - Signal seriousness to developers
- Partnership
  - GEF cannot bear full cost but is prepared to take the lead
  - R&D costs should be borne by others
- Performance benchmarking



# Incremental Cost and GEF

- Incremental cost = Baseline - GEF Option
- GEF will meet full, agreed incremental cost through grant or other financing modality
- GEF intervention is limited to \$50 million



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# Egypt

- Cairo workshop January 18-19
- Consultant [pre-]feasibility study now being completed
- Will be an IPP. Next up:
  - Prepare the bidding documents (consultants)
  - Present project to GEF Council



# Egypt - Technical Issues

- Probably ~120MW total capacity with ~30MW solar field
- Likely site Kureimat - gas-fired, water cooled, CCGT based
- Bidding will be open - trough or air tower look feasible
- Duct firing - up to 3-4 hours/day - improves the economics of the project



# India

- Being taken forward by KfW
- Will be back to back EPC/O&M bidding
- Finalizing contract for consultants to prepare the bidding documents
- Hoped-for bid date by end of year



# Mexico

- SMA has completed its feasibility report
- Some further questions on bottom firing
- Next up:
  - Preparing the bidding documents (CFE)
  - Launch bid - September 00?





# Mexico - technical issues

- 300MW total capacity ISCCS with 30MW solar field
- Will duct firing be included?



# Morocco

- Recruiting consultants:
  - Prepare bidding documents
  - Assist with bidding process
  - Do ancilliary studies (environment etc)
- Awaiting outcome of financial evaluation



# Morocco - Technical Issues

- Probably 120 MW capacity gas fired ISCCS at Ain Beni Mathar, using Algerian 'gaz de redevance'
- Had considered storage in pre-feasibility studies
- Now looking at cost effectiveness of pumped storage



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# How to Deliver GEF Financing?

- Need to ensure that the GEF financing provides maximum incentive to IPP to produce solar kWh
- Capital vs revenue payments
- What will most interest developers?

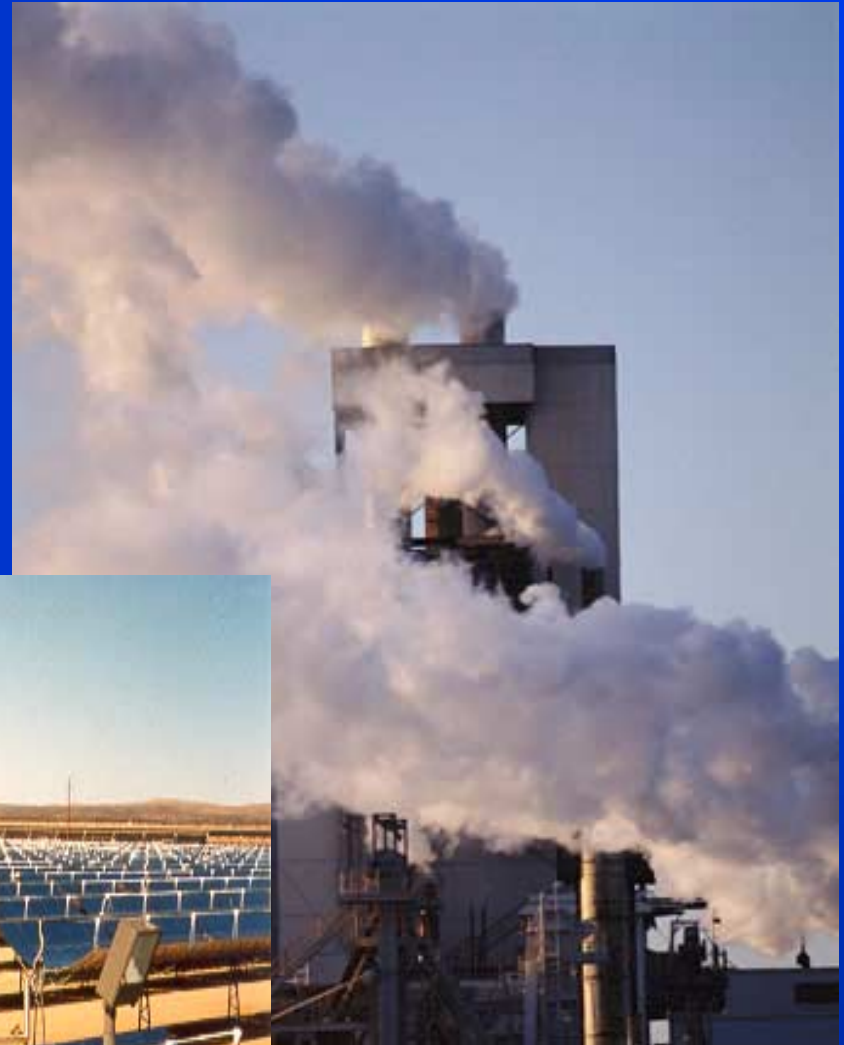


# What Will the Impact Be?

- How much can GEF expect for its \$200 million?
- If target cost reductions are met, will there be potential for more?
- Will the future carbon market be enough to bring forward more capacity?
- What do the technologists have up their sleeves for us?



# The End



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